

Definitions in the U.S. ATLAS Research Program

1. U.S. ATLAS Research Program includes:
 - a. Maintenance and Operations (M&O) which includes:
 - i. Pre-operations – all activities until the operations start except Installation which is covered in the Detector Construction Project
 - ii. Operations: Beams-on time
 - iii. Maintenance: Beams-off time
 - b. Upgrade R&D
 - i. Upgrade R&D is envisaged for the luminosity upgrade of the LHC $10^{35} \text{ cm}^{-1} \text{ s}^{-1}$
 1. New more radiation hardened electronics: LAr Front End Boards (FEB), LAr ROD upgrade R&D, Silicon Strips, Pixels, etc.
 - ii. The actual upgrade fabrication is not a subject of this Review
 - c. Physics and Computing – not the focus of this Review
2. CERN asked each experiment to estimate M&O
 - a. ATLAS had a Working Group and produced a document which divided costs into different categories:
 - i. Category A – Common Funds Shared by the whole experiment or System
 - ii. Category B – Shared by a detector system e.g. Liquid Argon Calorimeter
 - iii. Category C – Host Lab responsibility (minimized by CERN – even excluding electric power)
3. In August/September a small group representing the RRB (Resource Review Board – funding agencies) started to “scrutinize” the M&O estimates and found and separated some costs which were called “C&I” Commissioning and Integration. The scrutinizing continued for M&O Category A, B and C, and C&I. Category A&B
4. There is a DRAFT MOU for M&O which is being finalized for next year. Kirk and Willis will be expected to sign!
5. ATLAS is working on determining all the manpower needed for M&O. However, this is not usually accounted for in the European tradition.
6. Under a reorganized Technical Coordination, ATLAS has an installation schedule which all systems are trying to follow
7. The U.S. M&O program will focus on the U.S. deliverables – we plan to support our deliverables through the C&I and M&O stages.
8. For ATLAS there will be requests for contributions in 2002 to "Supplementary Costs" (52 MCHF)- overruns and for M&O (22.4 MCHF 2002-2005) and C&I (Commissioning and Integration) (21.1 MCHF). Our position is the following:

- a. On the cost overruns - we are capped at \$163.75 and are trying to maximize our deliverables by adding any items that we can from the Management Contingency list. We estimate that we could have 12-15 MCHF available yet for ATLAS. This will be assigned to obtain the greatest benefit for the experiment for detector elements, integration, common projects and other costs. We have set up a mechanism, the U.S. Management Contingency Steering Group, to determine how to use these funds for the best in ATLAS. Costs.
 - b. On the M&O and C&I Category A&B- we plan to contribute our share - We expect to support Category A&B M&O funds. For C&I, we expect in FY2002-FY2004 to have limited funds. We will contribute to C&I by our support of the pre-operations for the U.S. deliverables.
9. Our share of the Category A expenses (based on number of “authors”) is ~16%
10. Our share of M&O expenses for the Category B expenses based on our contribution to the subsystem:
- a. Silicon – 14%
 - b. TRT – 7%
 - c. Liquid Argon 21.8%
 - d. Tile Calorimeter 21.4%
 - e. Muon Spectrometer 20.3%
 - f. Trigger/DAQ – included in Category A

In each case we assumed invoices received in, for example, calendar Year 2002 would be paid in the first quarter of fiscal year 2003. We also assume 1.4 CHF=\$1 which is an average over many years.